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ABSTRACT

Forestry is the main focus of this fifth booklet in the series "101 Environmental Education Activities" by the Upper Mississippi River ECO-Center. Designed for students in the intermediate grades and junior high school, the booklet contains 9 science and social studies activities and 5 interdisciplinary activities. Most activity descriptions include the objectives, preparation, description, evaluation, materials, follow-up, re-plans, and reference sources when appropriate for the activities. Eight science and social studies activities are directed to the study of forests: the kinds and location; the national forests and parks system; fire causes, prevention, and fighting; tree identification; growth and uses; forest products and the lumber industry; wildlife; and tree ring time lines and the relation to the weather. There is also an activity which examines the relationship of the farm to the area economy. The 5 interdisciplinary activities include 4 field trips or hikes, 1 of which teaches the historical and resource value of cemeteries. These activities are designed to increase the students' powers of observation, sensory awareness* sense of aesthetics, and writing ability. (SB)

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# 101 ENVIRONMENTAL EDUCATION ACTIVITIES

BOOKLET #5

SCIENCE & SOCIAL STUDIES (INTERDISCIPLINARY)
ACTIVITIES

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The Upper Mississippi River ECO-Center
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Thomson, Illinois

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by
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101 Environmental Education Activities

Booklets:

1. Art and Music Activities
2. Language Art Activities
3. Mathematics Activities
4. Science Activities
5. Science and Social Studies (Interdisciplinary) Activities
6. Social Studies Activities

## SCIENCE AND SOCIAL STUDIES

### Contents


| Activity | Description of Activity |
|---|---|
| 1 | Forest Study: Kinds and Locations |
| 2 | Forest Study: National Forests, National Pks |
| 3 | Forest Study: Fire Prevention |
| 4 | Identification of Forest Trees |
| 5 | Forest Study: The Tree and Its Uses |
| 6 | Forest Study: Products |
| 7 | Forest Study: Wildlife |
| 8 | The Relationship of the Farm to the Economy of an Area |
| 9 | Tree-Ring Time Lines |


## INTERDISCIPLINARY

### Contents


| Activity | Description of Activity |
|---|---|
| 10 | Wild Flowers |
| 11 | Ten Minute Field Hikes |
| 12 | Simple Outdoor Education |
| 13 | Outdoor Hunt |
| 14 | Cemetery Study |

Activity: Forest Study: Kinds and locations

Discipline Area: Science, Social Studies

Objectives:

1. Children will have a comprehensive understanding of the forest areas of North America.
2. Children will know types of trees found in various forest areas.

Preparation: Each child needs a map of the United States, a map of Canada and colored pencils.

Activity:

1. Class studies history of forestry.
2. Class discusses types of forests
   a. Hardwood
   b. Softwood
3. Class studies large maps of forest areas.
4. Class learns difference in forest areas and reasons.
5. Class colors maps to show types of forests and locations.
6. Each child put key on map.
7. Each child saves map for later use.

Evaluation: Each pupil finishes map and properly keeps it.

Sources of Reference Material

American Forest Institute, 1619 Massachusetts Ave., N. W., Washington, D.C. 20036.
The American Forestry Association, 919 17th St., N.W., Washington,D.C. 20036.
The American Tree Association, 1214 16th St., N.W., Washington, D.C., 20006
Southern Hardwood Lumber Association, 805 Sterick Bldg., Memphis, Tenn. 38122.
Southern Forest Products Association, P.O. Box 52468, New Orleans, La. 70152.
Southern Forest Institute, One Corporate Square, Suite 281, Atlanta, Georgia, 30329.
U. S. Department of Agriculture, Forest Service, Washington, D.C. 20250.
Ontario Forestry Association, 150 Consumers Rd., Willowdale, Ontario.
Weyerhaeuser Company, Tacoma, Wash. 98401.
St. Regis Paper Co., New York, N. Y.
California Redwood Association, 617 Montgomery St., San Francisco, Cal. 94111
University of Illinois, College of Agriculture, Urbana, Ill.
Illinois Department of Conservation, Division of Forestry, Springfield Illinois.

Activity: Forest Study-National Forests, Memorial Forests, National Parks.

Discipline Area: Science, Social Studies

Objectives:

1. Children will learn how the country protects its forests.
2. Children will learn the management of government owned forest areas.

Activities:

If possible, a visit to a government controlled forest area an an interview with forester is important.

1. Learn how forests become national forest areas.
2. Study map showing national forest areas.
3. Learn difference between national forest, wilderness areas, and national parks.
4. Learn how forest areas are managed.
5. Learn uses.

Evaluation: None.

Activity: Forest Study Fire Prevention

Discipline Area: Science, Social Studies

Objectives:

1. Children will learn causes of forest fires.
2. Children will learn to prevent forest fires.
3. Children will learn of modern methods of forest fire fighting.

Activities:

1. Discover causes of fires.
2. Discover of fire danger to various regions and why.
3. Discover how fire is controlled.
4. Learn of areas where fires are allowed to burn and why.
5. Cost of forest fires.

Evaluation: None

Activity: Identification of Forest Trees

Discipline Area: Science, Social Studies

Objectives:

1. Children learn to identify forest trees.
2. Children learn which trees are valuable as lumber.

Preparation: Guide leaflets, maps of forest areas.

Activity:

1. Children work in field.
2. Children learn to identify trees
   a. by leaves
   b. by buds
   c. by bark
   d. by shape
3. Classroom discussion of varieties of trees not found in area.
4. Discuss why some trees are valuable as lumber and some not.

Source Material for Above Activity:

Collingwood and Brush, Knowing Your Trees
Harlow, Fruit and Twig Key to Trees and Shrubs
Mohlenbrock, Forest Trees of Illinois
Petrides, Field Guide to Trees and Shrubs
Trelease, Winter Botany
Watts, Master Tree Finder
Watts, Winter Tree Finder
Zim, Trees
American Forest Institute
Ontario Forest Association, Willowdale, Ont.
Canadian Forestry Service
Canadian Pulp and Paper Association
Weyerhaeuser Co.
U. S. Department of Agriculture, Forest Service

Activity: Forest Study: The Tree and Its Uses

Discipline Area: Science, Social Studies

Objectives:

1. Children will learn how a tree grows.
2. Children will learn the parts of a tree.
3. Children will learn how a tree is used for lumber.
4. Children will learn value and uses of different trees.

Activity:

1. Study charts on tree growth.
2. Study charts on part of tree.
3. Determine tree age by examining a fresh stump or cross section of a log.
4. Learn how different parts of a log are used for lumber.
5. Learn what kinds of lumber are used for different wood products.
6. Learn uses of waste products.

Evaluation: If this is part of a larger project, no evaluation.

Activity: Forest Study: Products

Discipline area: Science, Social Studies

Objectives:

1. Children learn size and value of lumber industry.

Preparation: A field visit to a lumber mill.

Activities:

This is a good activity for group work. Class can be divided to work in various areas to find what products come from lumbering. Some suggestions are:

1. pulpwood
2. sawlog lumber
3. veneer logs
4. bolts
5. bark
6. sap
7. gums
8. foliage
9. fruit
10. other products

Charts and displays may be made to illustrate what they have learned. If an in depth study is made, the class may assemble a display.

Evaluation: This depends on how complete the teacher plans for the study.

## Man Relates to His Environment

Activity: Relationship of the farm to the conomy of the area

Discipline Area: Social Studies, science

Grade Level: Intermediate and junior high

Objectives:

1. Children will better understand the importance of farming to to life.
2. Children will learn of the relationship of farming to the prosperity of the community.

Activities:

1. Children will prepare reports on farming in the area covering:
   a. average size of farms
   b. ownership: farmed by owner or tenant
   c. soil types
   d. main crops
   e. value of crops raised in area
   f. livestock raised
   g. where crops and livestock are sold
   h. importance of dairying
2. The class will investigate businesses related to farming
   a. grain elevators and storage
   b. feed stores
   c. implement stores
   d. trucking
   e. food processing plants
   f. fuel suppliers
   g. seed grain dealers
   h. fertilizer sources
   i. farm to market roads
   j. electricity to farms
   k. government agencies
   l. insurance
   m. others
3. Conclusions

   Results of study should be summarized in a paper or booklet.

   Pupils may wish to make a bulletin board display showing the relationship of farms to other businesses in their community.

Activity: Tree-ring time lines

Discipline Area: Science and Social Studies

Grade Level: Intermediate and junior high

Objectives:

1. Students will better understand the age of a tree by determining the historical events that occurred during the growth of the tree.

2. Students will learn how weather conditions affect tree growth and how a long range picture of weather conditions can be determined from tree rings.

Materials needed: a stump or cross-section of a log
pins
tabs of colored paper
books on tree growth and weather
student work sheets

Activity:

1. Students count tree rings carefully marking each ring with a pin.

2. Students are given a list of historical events, asked to find the ring that grew that year and to mark it with a a colored tab giving the date and the event.

3. Students discuss the difference in tree ring widths and to relate periods of plentiful and sparse rainfall to tree growth.

4. Each ring formed during a dry year is marked with a code color.

5. Areas showing fire and/or insect damage are marked in color code.

6. Children complete work sheets.

Follow up Activities:

1. Ask a forester to speak to the class.
2. Visit a lumber yard and find out about the various kinds of lumber; e.g. what trees it comes from, the value of each, the different uses for different kinds of lumber, and how each is best for its particular use.
3. Take a field trip to a forested area. If possible visit a tree farm.
4. Visit a fire lookout tower and learn how forests are protected.
5. Study insects that damage forests and learn what is being done to control them.
6. Study the forests of the U.S.;learn where they are located, how they are managed, how lumbering is carried on.
7. Locate the national forests; learn of their management, how they are designated, and their uses.

Tree-ring Work Sheet

1. How old was the tree when it was cut? _____
2. If you know the kind of tree it was put in the name._____
3. How old was the tree when each of the following events took place?
   a. the first moon landing _____
   b. start of World War II _____
   c. the assassination of John F. Kennedy _____
   d. the founding of the United Nations _____
   e. the bombing of Pearl Harbor _____
   f. the first talking movie _____
   g. Lindberg's solo Trans Atlantic flight _____
   h. the wall street crash which started the Great Depression ____
   i. the Woman Sufferage amendment _____
   j. the date of the dropping of the atomic bomb on Hiroshima _____

   (This list may be made up of any historical events.)
4. How old was the tree when you were born? _____
5. How old was the tree when you started to school? _____

Activity: Wild Flowers

Discipline Area: Interdisciplinary

Objectives:

1. Pupils will learn an esthetic value of wild flowers.
2. Pupils will learn environment favorable to different species.
3. Pupils will learn that all wild flowers should be protected.
4. Pupils will learn types of wild flowers found in different seasons.
5. Pupils will learn to identify some common and some rare flowers.
6. Pupils will be able to express experiences through writing poetry or prose.

Preparation:

1. Pupils will study cards or other pictures of wild flowers.
2. Pupils will view slides or films of wildflowers.

Activities:

1. Pupils hike through areas where wild flowers are found.
2. Pupils observe and note growing conditions, soil, moisture, and light.
3. Pupils make records of flowers found: place, date, growing conditions.
4. After hike assemble material for bulletin board or other display.
5. Pupils use experience for language arts writing project.
6. Some pupils may photography flowers.

Evaluation:

Pupils should be evaluated on perception: aesthetic values and need for conserving.

**Activities:** Ten-Minute Field Hikes
(These exercises are designed to increase the children's power of observation by using all the senses.

**Discipline area:** Interdisciplinary

**Grade Level:** Primary, intermediate

**Objectives:**

1. The children will develop a greater awareness of their environment by using their senses.

**Materials needed:**

clipboards
worksheets
pencils

**Procedure:**

Each worksheet is self-explanatory.

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WORKSHEET

How many of the following things did you see on your hike? If you can name the kind, do so.

| Mammals | Birds | Insects and other small animals | Plants |
|---|---|---|---|
| Dogs | Sparrows | Earthworms | Trees |
| Cats | Robins | Spiders | Bushes |
| Rats | Pigeons | Ants | Flowers |
| Squirrels | Starlings | Roaches | Grass |
| Horses | Bluejays | Flies | Moss |
| Mice | Cardinals | Butterflies | Lichens |

TRY THIS AROUND YOUR SCHOOL OR PARK WITH YOUR STUDENTS AS A SIMPLE OUTDOOR EDUCATION ACTIVITY OR MAKE UP YOU OWN.

NAME _____ DATE _____

WEATHER

A. Clear & Sunny
B. Dark & Rainy
C. Windy & Dark
D. Windy & Clear
E. Other

THINGS HAPPENING

___ 1. An insect walking
___ 2. A tree budding
___ 3. A spider web
___ 4. Water working
___ 5. (Add other items)

THINGS TO TASTE

___ 1. Evergreen tree needle
___ 2. A piece of tree bark
___ 3. Evergreen tree sap
___ 4. Sumac berry
___ 5. (Add other items)

THINGS TO SMELL

___ 1. Clean air
___ 2. A hole
___ 3. Crushed evergreen needle
___ 4. Dirt
___ 5. An unpleasant smell
___ 6. A pleasant smell
___ 7. (Add other items)

THINGS TO SEE

___ 1. A bird
___ 2. Evergreen tree
___ 3. Raccoon tracks
___ 4. A seed
___ 5. Insect house
___ 6. Lichens
___ 7. A white tree
___ 8. Gall
___ 9. White oak leaf
___ 10. Red oak leaf
___ 11. A pond creature
___ 12. Old birds' nest
___ 13. Other tracks
___ 14. A feather
___ 15. (Add other items)

THINGS TO HEAR

___ 1. Wind in trees
___ 2. Machine sounds
___ 3. Bird singing
___ 4. Water running
___ 5. Leaves rustling
___ 6. Animal calling
___ 7. Farm animal noise
___ 8. (add other items)

THINGS TO FEEL

___ 1. Prickly plant
___ 2. Warmth from sun
___ 3. Wind
___ 4. Smooth bark
___ 5. Rough bark
___ 6. Running water
___ 7. Moss on rocks
___ 8. Rotten wood
___ 9. (Add other items)

This activity was borrowed from the Bettendorf Outdoor Education Program.

## OUTDOOR HUNT

| | | |
|---|---|---|
| 1. | Find and pick up two pieces of litter | 2 pts. |
| 2. | Find two different trees | 2 pts. |
| 3. | Identify the two trees you found | 1 pt. bonus |
| 4. | Find two different shrubs | 2 pts. |
| 5. | Identify the two shrubs you found | 1 pt. bonus |
| 6. | Find signs of two animal homes on the school grounds | 2 pts. |
| 7. | Find some animal tracks on the school grounds | 1 pt. bonus |
| 8. | Find an outside trash can and put the litter you picked up in it. | 2 pts. |
| 9. | Find an outside bird feeder on the school grounds | 2 pts. |
| 10. | If there is not a feeder on the school grounds why don't you and your classmates build one later. | 5 pt. bonus |
| 11. | Think of two adjectives describing the weather | 2 pts. |
| 12. | Think of two adjectives describing the grass | 2 pts. |
| 13. | Think of two adjectives describing the trees. | 2 pts. |
| 14. | Write two different words describing TWO different sounds you heard while on the school grounds. | 2 pts. |
| 15. | Name two insects you saw on the school grounds | 2 pts. |

(Each teacher should coordinate the rules for the hunt to fit his or her own school site.)

**Activity**: Cemetery Study

Discipline Area: Interdisciplinary

Grade Levels: Intermediate, junior high

Objectives:

1. To develop an appreciation and awareness of the cemetery as a supplement to the present curriculum of art, language arts, history, mathematics, and others.
2. To develop a respect and appreciation for this particular resource that will result in proper care of and behavior at the cemetery.
3. To motivate students to do further study on their own apart from that done in the school.

Materials needed:

clipboards
worksheets
pencils

Introduction:

A cemetery has many educational values for school children. Since it is a place "sacred and dear" to those who have family members or friends buried there, it is important that students approach this study with proper respect.

An old cemetery will tell much of the community's historical past and is valuable in the study of history and sociology.

Pre-Planning:

The cemetery study should be closely correlated with other discipline areas. For example, a study of pioneer life can lead to the study of local history. A cemetery study answers many questions about local history.

Permission for the use of the cemetery should be sought from those responsible for it.

As a cemetery study is interdisciplinary, this study guide has been organized into subject matter catagories.

## ANOTHER COMMUNITY RESOURCE -- THE CEMETERY

Have you ever considered the educational value to be derived from an almost forgotten local cemetery? An examination of the curriculum for such a trip may reveal these possibilities:

1. Social Studies (local history):
   a. Comparing dates on headstones as to wars, diseases, plagues and early settlement into area.
   b. Burial customs and problems.
   c. Different nationalities represented within the cemetery.

2. Arithmetic:
   a. Figuring the age of a person at death.
   b. Oldest person and oldest grave.
   c. Geometric shapes of stones.

3. Science:
   a. Changes in life span.
   b. Types of materials used for gravestones.
   c. Effects of time and weathering on the gravestones.
   d. Occurance of epidemics.
   e. Flora of cemetery.

4. Geography:
   a. Design and location of graveyard.
   b. Reasons for early settlements of the area.

5. Art:
   a. Sketch design (decorations) of stones.
   b. Make transfer of gravestone with crayon and paper.

Remember that the real value of a trip to the cemetery is achieved when it is kept in context with on going studies.
Provide time for pre-planning with your class to establish some basic educational objectives. Allow time for discussing the rules of respect necessary for a cemetery visit.

The following worksheet contains some tips to assist you in achieving your objectives. One hour will be needed in the cemetery for gathering the information. The final sheet may be completed back in the classroom. Children whould be given opportunities during the follow up to share their experiences.

## RECORDS OF BURIALS 1840 1900

| NAME | DATES BIRTH | DEATH | AGE | PLACE OF BIRTH |
|---|---|---|---|---|
| | | | | |

## RECORD OF BURIALS 1900 1975

| NAME | DATES BIRTH | DEATH | AGE | PLACE OF BIRTH |
|---|---|---|---|---|
| | | | | |

WORKSHEET

When was the earliest burial you found?

_____ Date _____

The latest burial?

Name _____ Date _____

The oldest person? Name _____ Age ____

The youngest? Name _____ Age ____

How many people did you find who had been born in another country?

What countries did they come from? _____

_____

_____

What other states had some of the people come from? _____

_____

How many soldiers' graves did you find? _____

Did you find any soldiers from the following wars? Revolutionary ___

War of 1812 _____ Civil War _____ Spanish American War _____

World War I _____ World War II _____ Were any soldiers killed

in action? _____ How are soldiers' graves marked? _____

_____

How can you tell if there was an epidemic which caused many deaths?

_____

Did you find any evidence of epidemics? _____ Date ____

_____ Date _____

Did you find any graves of historically important people? _____

Whom? _____

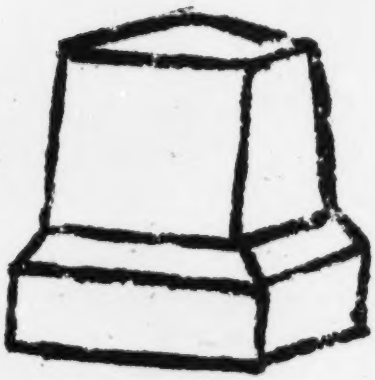
_____

COPY SEVERAL EPITAPHS

TYPES OF MARKERS

DATES

DATES



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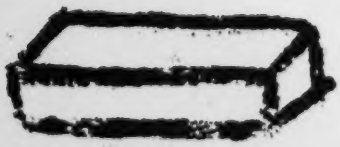

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